

REMARKS

This application has been reviewed in light of the Office Action dated July 6, 2005. In view of the foregoing amendments and the following remarks, favorable reconsideration and withdrawal of the objection and rejections set forth in the Office Action are respectfully requested.

Claims 1-14 are pending. Claim 14 has been withdrawn from consideration as directed to a non-elected invention. Claims 1, 3-8, 12 and 13 have been amended. Support for the claim changes can be found in the original disclosure, and therefore no new matter has been added. Claims 1, 13 and 14 are in independent form.

Claim 3 was objected to on a formal ground. This claim has been amended accordingly. Withdrawal of this objection is respectfully requested.

Claims 1, 2 and 8 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,781,176 (*Ramesh* '176). Claim 3 was rejected under 35 U.S.C. § 103(a) as being unpatentable over *Ramesh* '176 in view of U.S. Patent No. 5,214,738 (*Nakajima et al.*). Claim 4 was rejected under 35 U.S.C. § 103(a) as being unpatentable over *Ramesh* '176 in view of U.S. Patent No. 6,060,735 (*Izuha et al.*). Claims 5 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Ramesh* '176 in view of U.S. Patent No. 5,519,235 *Ramesh* '235. Claims 6, 7 and 9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Ramesh* '176 in view of U.S. Patent No. 6,743,292 (*Jia et al.*). Claim 10 was rejected under 35 U.S.C. § 103(a) as being unpatentable over *Ramesh* '176 in view of U.S. Patent No. 6,231,779 (*Chiang et al.*). Claims 12 and 13 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Ramesh* '176 in view of U.S. Patent No. 6,739,703 (*Higuchi et al.*). Applicants respectfully traverse these rejections.

Independent Claim 1 is directed to an actuator comprising a laminated structure having a vibration plate, a lower electrode, a piezoelectric element, and an upper

electrode laminated sequentially on a basic element. At least the lower electrode of the two electrodes is an La-doped single orientated crystal or monocrystal oxide film containing Sr and Ti, in which La, Sr and Ti are contained in a common layer. Independent Claim 13 is directed to a liquid discharge head including, *inter alia*, similar or identical features.

One feature of the invention as claimed in independent Claim 1 is that La, Sr and Ti are contained in a common layer.

Ramesh ‘176 relates to a conductively doped strontium titanate barrier intermediate a silicon underlayer and an epitaxial metal oxide film. The Office Action cites Fig. 5 and col. 6, lines 45-61 as teaching “an actuator comprising: a laminated structure having a vibration plate (62, 70, 72), a lower electrode (64), a piezoelectric element (66), and an upper electrode (68) laminated sequentially on a basic element, wherein at least said lower electrode or (*sic*) said two electrodes is a thin oxide film of La-doped single oriented crystal or monocrystal containing Sr and Ti.” However, Applicants note that Figs. 4 and 5, and col. 6, lines 45-61, show that lower electrode layer 64 is composed of lanthanum strontium cobalate ($\text{LaSr}_{1-x}\text{Co}_x\text{O}_3$ or LSCO). Ti is not shown to be included in lower electrode layer 64, but rather in barrier layer 62. Applicants submit that nothing in *Ramesh* ‘176 would teach or suggest that a lower electrode is an La-doped single orientated crystal or monocrystal oxide film containing Sr and Ti, in which La, Sr and Ti are contained in a common layer.

Furthermore, the layers 62, 70 and 72 of *Ramesh* ‘176 are understood to constitute part of a memory cell, not to constitute a vibration plate. Nothing in *Ramesh* ‘176 is understood to teach or suggest a vibration plate or an actuator.

For at least the above reasons, *Ramesh* ‘176 is not seen to contain all of the elements of either independent Claim 1 or 13. Accordingly, those claims are believed allowable over *Ramesh* ‘176.

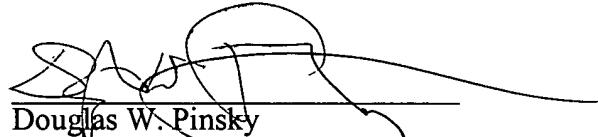
A review of the other art of record, including *Nakajima et al.*, *Izuha et al.*, *Ramesh* '235, *Jia et al.*, *Chiang et al.* and *Higuchi et al.*, has failed to reveal anything which, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as a reference against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other claims presented for examination are each dependent from independent Claim 1 and are therefore believed patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual consideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,



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